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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,301	02/23/2004	Akira Kuibira	039.0034	2300

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EXAMINER	
PAIK, SANG YEOP	
ART UNIT	**PAPER NUMBER**
3742	

MAIL DATE	DELIVERY MODE
12/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/708,301	KUIBIRA ET AL.	
	Examiner	Art Unit	
	Sang Y. Paik	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,8 and 13-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,8 and 13-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-4, 6, 8-10, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuibira et al (US 2002/0007911) in view of Kadomura et al (US 5,968,273) or Shamouilian et al (US 6,462,928), and Kanno et al (US 2003/0168439) or Takuma et al (JP 09-249465).

Kuibira shows the structure claimed including a ceramic susceptor made of aluminum oxide or aluminum nitride having the thermal conductivity of 100 w/mk or more with a resistive heating element present more toward the side opposite to the retaining side of the susceptor which has a flatness less than 500 um or less with a diameter 200 mm or more, the heating element having a width .5 mm and a line interval of .5 mm, and a heat-reflecting support plate (2) attached to the susceptor. However, Kuibira does not explicitly show the support plate (2) made of a metal plate having a thermal conductivity and having the susceptor attached to the metal plate with an adhesive bonding layer, screws or recess.

Kadomura shows it is known in the art to provide a metal plate (2) as a support plate for a ceramic susceptor wherein the metal plate is made of the claimed aluminum silica carbide composite material. Kadomura also shows a metal plate 8(b) made of molybdenum attached along with the metal support plate. Kadomura shows that the metal plate would display the over 100 W/mk or more thermal conductivity with a thickness that is greater than the susceptor.

Shamouilian shows it is known in the art to provide a ceramic susceptor made with alumina, silica or boron carbide having a resistive heating element incorporated therein with a metal bonding layer/plate (295) made of copper and molybdenum alloy along with a support (190) made of aluminum and silicon carbide as well as copper, tungsten, and molybdenum and its mixture thereof (see column 11, lines 20-31).

In view of Kadomura or Shamouilian, it would have been obvious to one of ordinary skill in the art to adapt Kuibira with the metal support plate having the claimed materials including aluminum silicon carbide or copper-molybdenum, which is known to provide a higher thermal conductivity than the ceramic susceptor, to provide alternatively suitable heat transfer means to allow the susceptor either to heat or cool the thermal energy generated by the heating element toward the retaining side.

Kanno shows that it is known in the art that a bolt is used to fix a ceramic susceptor or heater to a cooling jacket, and Takuma also shows that it is known to provide an adhesive bonding layer between an aluminum nitride member to a metal member. In view of Kanno or Takuma, it would have been obvious to one of ordinary skill in the art to provide various means such as an adhesive bonding layer, screws or any other suitable means to join the susceptor and the metal plate so that a close and tight contact can be made to enhance a thermal transfer between the members.

3. Claims 11, 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuibira in view of Kadomura or Shamouilian, and Kanno or Takuma as applied to claims 1-4, 6, 8-10, 13 and 14 above, and further in view of Hiramatsu et al (US 6,507,006).

Kuibira in view of Kadomura or Shamouilian, and Kanno or Takuma, shows the structure claimed except the ceramic susceptor having the porosity .03% or less.

Hiramatsu shows that the ceramic susceptor can be made of silicon carbide, aluminum nitride as well as alumina and boron nitride, and it further shows that the semiconductor wafer chuck with a ceramic substrate with the porosity less than 5%, and, preferably from 0.01 to 3%. It would have been obvious to further adapt Kuibira, as modified by Kadomura or Shamouilian, and Kanno or Takuma, with the ceramic susceptor having the claimed porosity for a high thermal conductivity and prevent breakdown of the voltage drop in the ceramic substrate to improve the chucking of a wafer to the heating surface.

Response to Arguments

4. Applicant's arguments filed 11/01/07 have been fully considered but they are not persuasive. (Before stating addressing the applicant's argument, it t is noted that a typo has been occurred in the previous office action with respect to the US Patent number of Kadomura which should have been 5,968,273 rather than 5,981,913. They are both issued to Kadomura, but the correct reference should been that of the US Patent number 5,968,273).

The applicant argues that the metal plates (9a, 9b- which are equivalent to 8a and 8b in the US Patent 5,968,273) shown in Kadomura are used for transferring cool heat from the metal jacket which is used to conduct heat into the metal jacket rather than diffuse heat toward the retaining side of the susceptor. This argument is not deemed persuasive since the metal jacket (2) of Kadomura is used to meet the recited metal plate, and Kadomura having the same material as that of the claimed metal plate would also diffuse heat as is done with the claimed invention. The metal plates (9a and 9b) referred to by the applicant serves as a transitioning layer to promote the

thermal transfer between the susceptor and the metal support plate/layer either to cool or insulate the susceptor depending on the intended purpose of the metal jacket. It is noted that the dual purpose is clearly intended by Kadomura (see column 2, line 63 to column 3, line 38). Furthermore, Kadomura, having the structure same or similar to that of the claimed structure, is capable of performing the same function as that of the recited function. There is no recited claim structure that is different from that of Kadomura. Thus, the applicant's argument is not deemed persuasive.

It is noted that new reference, Shamouilian, is also applied.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Y. Paik whose telephone number is 571-272-4783. The examiner can normally be reached on M-F (6:30-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on 571-272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sang Y Paik
Primary Examiner
Art Unit 3742

syp